Forest Insect Conditions
On the Teton National Forest
and in Grand Teton National Park
1969

This is a discussion of some of the Forest insect problems on the Forest and in the Park during 1969. Material for this report was assembled from aerial survey data and from special on-the-ground evaluation surveys made during summer and fall.

Briefly, the most important insect problem continues to be the mountain pine beetle in lodgepole pine. In the Park, the infestation is on the increase, while on the Forest, in most areas, it continues to decline. Logging is the only known effective method of lasting control. Other insects causing problems of less importance are the spruce budworm, Engelmann spruce beetle, and the sugar pine tortrix. Their location is shown on the aerial survey map mailed earlier. A more complete discussion of these insect problems follows:

Mountain pine beetle, Dendroctonus ponderosae Hopk.

The overall distribution of the mountain pine beetle in lodgepole pine on the Forest and in the Park remains essentially unchanged from that recorded in 1968. The major change is in infestation intensity and accumulated mortality. Although the infestations on the Forest and in the Park are the same, they will be discussed separately.

Grand Teton National Park

The Park has a long history of mountain pine beetle depredation. The present outbreak began sometime during the midfifties and continues to this day. From 1957 to 1967, more than 300,000 individual trees were chemically treated in an attempt to control the infestation. Although these efforts suppressed the infestation, they did not control it. Today, 2 years following the culmination of the control effort, the beetle has undergone a general resurgence and tree killing has returned to a relatively high level (Figures 1-4). The results of an on-the-ground fall evaluation survey to determine the trend of the infestation follow:

Teton 69

Area	No. of Trees Attacked in 1969 1/	1968	Buildup 2/ Ratio	Trend
Pilgrim Creek	14	7	2.0:1	Increasing
Arizona Creek	58	21	2.8:1	Increasing
Lizard Creek	45	21	2.1:1	Increasing
Two Ocean Lake	5	6	0.8:1	Static
Signal Mtn. #1	42	16	2.6:1	Increasing
Signal Mtn. #2	138	38	3.6:1	Increasing
Spalding Bay	76	55	1.4:1	Increasing
Glacier Gulch	10	20	0.5:1	Decreasing
Taggart Lake	61	24	2.5:1	Increasing
White Grass	34	22	1.5:1	Increasing
Phelps Lake	33	25	1.3:1	Increasing

1/ Brood Stages were chiefly eggs and small larvae.

2/ Buildup ratio is simply the ratio of new to old attacks; i.e., Arizona Creek: 58/21 = 2.8:1

With only a few exceptions, the number of new attacks exceeded the old ones, indicating a significant increase in the rate of tree killing throughout the Park. Since most areas still contain many relatively large trees, and the present rate of tree mortality is on the increase, the infestation level will continue to rise for at least two, possibly three, years. By that time, many of the larger trees will be killed and the beetle will be forced into the smaller trees. We have sufficient evidence now to say that if natural forces do not intervene, approximately 30 percent of all lodgepole pine, 4 inches and larger, will be killed.

Areas that are expected to contain many "redtops" in 1970 are Signal Mountain, the Spalding Bay Area, Taggart Lake, Whitegrass, and along the highway from Pilgrim Creek north to the Park boundary. Very little subsequent mortality can be expected in the Emma Matilda-Two Ocean Lake area because these stands have already been seriously depleted by the beetle.

Teton National Forest

In contrast to the situation in Grand Teton Park, mountain pine beetle populations on the Forest, for the most part, continue to decline. The once huge infestation in the Wilderness continues to recede (Figure 5). The reason for this overall decrease is largely due to the attrition of suitable host material. Some infestations continue to be active in the uppermost reaches of the larger drainages, such as Pacific and Pilgrim Creek and the Buffalo River, but they too are on the decline. Many of the residual beetle populations in these areas have moved into the widely scattered stands of white bark and limber pine.

South of the Wilderness in the control areas, tree killing is also at a low ebb.1/ The number of susceptible size trees in most of these areas is too few to nurture much less maintain a new infestation.

Some widely scattered tree killing of small diameter trees continues in portions of Ditch Creek and around Antelope Mountain. Additional mortality is also occurring on the south side of Slide Lake and in the Goosewing area.

The only significant areas of increase on the Forest are on the south bank of the Hoback River between the mouth of Granite Creek and Bondurant. On the north side of the Hoback, scattered mortality occurred but considerably less than in 1968. Even greater reductions were observed in the upper Hoback, in Fisherman Creek, in the North Fork of Fisherman Creek, and on adjacent BLM lands. These areas supported heavy beetle populations for several years and the reduction in tree killing is largely a result of the depletion of suitable size trees.

A small outbreak may be in the offing on private land south of Wilson between Trail and Mosquito Creeks. The future status of this infestation is unknown but there was a noticeable increase in redtops this year over last. This area will be examined rather closely in 1970.

The results of an on-the-ground survey to determine trend in a few areas follows:

Area	No. of Trees Attacked in 1969	1968	Buildup Ratio	Trend
Nickel Creek	15	22	0.7:1	Decreasing
Lost Creek	11	4	2.8:1	Increasing
Ditch Creek	1	8	0.1:1	Decreasing
Slide Lake	8	6	1.3:1	Static
Kilgore Creek	12	23	0.5:1	Decreasing
Little Cliff Creek	15	29	0.5:1	Decreasing
Jack Pine Creek	6	10	0.6:1	Decreasing

It is obvious from this table that the infestation level in most areas was much too light to establish definite trends. Overall, however, and considering the few exceptions listed above, the existing downward trend should continue through 1970.

In the Forest long-range and effective mountain pine beetle control can best be obtained by strategic logging. First priority should be given the low elevation, fringe area stands for they are the most susceptible

1/ From 1960 to 1968, approximately 970,000 trees were chemically treated on the Forest.

and usually suffer the most damage. Consideration should also be given those stands in and near the control areas where it is felt that sufficient gains have been made to afford logging opportunities. Areas in this category are Antelope Mountain, upper Spread Creek, and Ditch Creek. Here, it seems, is an opportunity to make all of the control effort worthwhile.

In the Park and in high use recreation areas on the Forest, some of the most desirable trees can be protected by the use of preventive sprays. These areas will be under severe pressure for the next two, possibly three, years.

Spruce budworm, Choristoneura occidentalis Free.

The general increase in spruce budworm populations forecast for 1969 did not materialize; instead, there was an overall Region-wide reduction. The amount of infested acreage in the southern end of the Forest during the past three years, as determined by aerial observation, follows:

Year	Infestation Intensity			
	Light	Medium	Heavy	Total
1967	2,900	-	-	2,900
1968	9,040	5,560	-	14,600
1969	8,000	-	-	8,000

The Teton infestation followed this general decline as did the contiguous infestations on the Bridger and Targhee Forests. Budworm feeding is still restricted to the southern edge of the Forest with the largest single infestation still persisting in Douglas-fir and subalpine fir along the Snake River from Hot Springs south to the Forest boundary. Feeding damage is light with no serious damage to the host trees nor is there a threat of serious damage in the immediate future.

Egg mass counts made from systematic collections of Douglas-fir foliage taken from Martin Creek indicate that the budworm is still present and light defoliation will be noticeable in 1970, but no more than this year. Control is not needed nor recommended.

Engelmann spruce beetle, Dendroctonus obesus Mann.

Most of the existing infestations in standing trees in the higher elevations showed a marked decline this year. The only serious infestation of consequence exists in standing spruce in Berry and Owl Creeks in the Park but considerably under the high level of last year.

Teton 69

The threat of renewed beetle activity during the next two and three years has been intensified by numerous avalanches in the high country in the Forest and Park. In upper Trail Creek, South of Teton Pass highway, a small but powerful avalanche uprooted many trees and broke others off 10 to 12 feet above ground level. Fortunately, from an insect standpoint, most of the trees were subalpine fir and no threat. The few Douglas-firs and spruces had been attacked by Dendroctonus and Ips beetles, but the attacks were too few to cause concern.

A potentially serious situation exists in upper Granite Creek, however. Here numerous snowslides thundered off the steep slopes, crashed into spruce and subalpine fir stands in the creek bottom, and deposited the debris on the opposite slope (Figures 6-8). The avalanche debris just above Hot Springs Resort was mostly nonsusceptible subalpine fir. Some spruce was wedged in among the fir, but it was of small diameter and incapable of rearing spruce beetle populations. The next avalanche, a mile farther up the Canyon, poses a serious hazard, however. This material is mostly large diameter spruce and deposited in a jackstraw pattern, two, three, and four logs high (Figure 6). Although no attacks were made this year, the material will remain highly vulnerable in 1970. The avalanche debris deposited farther up the Canyon was not visited but is suspected as being in the same condition. If this material is attacked in 1970, and brood development proceeds normally, it will probably be 1972 before it becomes a threat to standing timber. All of these areas will be examined in 1970.

Sugar Pine Tortrix, Choristoneura lambertiana (Busck)

Infestations of the sugar pine tortrix in mature and pole size lodgepole stands in Mosquito and Fall Creeks that were visible from the air last year were practically nonexistent in 1969. Only light activity in one relatively small area was detected in sapling and pole size lodgepole between the main fork of Fall Creek. No insects, their remains, or damage could be found in the previously infested pole size stand in Mosquito Creek below the Cottonwood Road.

In the Park, along the straight stretch of road between Jenny Lake and Spalding Bay, defoliation was more apparent. These stands have supported more stable tortrix populations and have not experienced the rather variable population fluctuations as on the Forest. Repeated defoliation over the last three and four years has eventually resulted in top kill of many intermediate and codominant lodgepole pine (Figure 9).

The future status of this insect in the Forest and Park is unknown.

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Teton 69

APPENDIX

Figure 1. Stereogram showing general mountain pine beetle resurgence in Grand Teton National Park. Snake River in foreground and Phelps Lake and entrance of Death Canyon in background. Kodacolor-X

Figure 2. Stereogram of view of mountain pine beetle-infested lodgepole pine in northern portion of Grand Teton National Park. Note pockets of dead timber. Jackson Lake in foreground and Mt. Moran in background. Kodacolor-X

Teton 69

Figure 3. Stereogram of view into lower Pacific Creek in Grand Teton National Park. This area was controlled for seven consecutive years: 1961-67.

Figure 4. Stereogram of view due east of Figure 3. Teton Wilderness in background. Kodacolor-X

Teton 69

Figure 5. View into Lava Creek in the Teton Wilderness. This area, slightly north and east of the areas in Figures 3 and 4, was never controlled. Kodacolor-X

Jeton 69

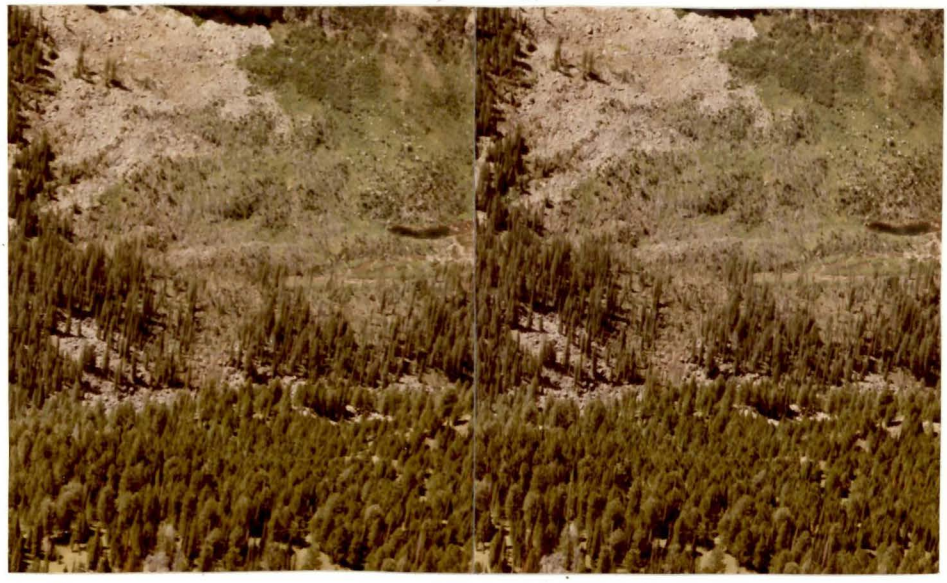

Figure 6. Stereogram of avalanche damage in Granite Creek. Avalanche came off steep wall in background, (not shown) roared down slope, crossed Granite Creek, and up and over small ridge in center of picture. Kodacolor-X

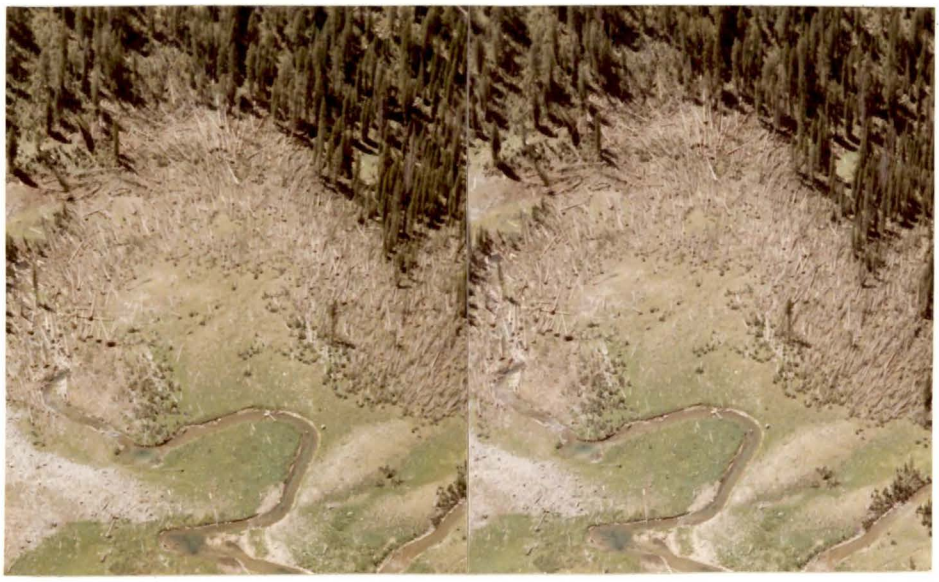

Figure 7. Stereogram of view of more avalanche damage in upper Granite Creek. Kodacolor-X

Teton 69

Figure 8. Stereogram of view of more avalanche damage in upper Granite Creek. Kodacolor-X

Teton 69

Figure 9. Dead terminal and lateral branches in top of intermediate lodgepole pine, Grand Teton National Park. Ektachrome-X